



Project ATHENA creates surrogate human organ systems

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Surrogate human organs could revolutionize the way biologists and medical personnel screen new drugs or toxic agents

LOS ALAMOS, N.M., June 15, 2015—The development of miniature surrogate human organs, coupled with highly sensitive mass spectrometry technologies, could one day revolutionize the way new drugs and toxic agents are studied.

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“By developing this ‘homo minutus,’ we are stepping beyond the need for animal or Petri dish testing: There are huge benefits in developing drug and toxicity analysis systems that can mimic the response of actual human organs,” said Rashi Iyer, a senior scientist at Los Alamos National Laboratory.

ATHENA, the Advanced Tissue-engineered Human Ectypal Network Analyzer project team, is nearing the full integration of four human organ constructs — liver, heart, lung and kidney — each organ component is about the size of a smartphone screen, and the whole ATHENA “body” of interconnected organs will fit neatly on a desk.

A [new video](#) available on the Los Alamos National Laboratory YouTube channel updates the ATHENA project as it begins to integrate the various organ systems into a single system.

Some 40 percent of pharmaceuticals fail their clinical trials and there are thousands of chemicals whose effects on humans are simply unknown. Providing a realistic, cost-effective and rapid screening system such as ATHENA with high-throughput capabilities could provide major benefits to the medical field, screening more accurately and offering a greater chance of clinical trial success.

ATHENA is funded by the Defense Threat Reduction Agency (DTRA) and is a collaboration of Los Alamos National Laboratory, Harvard University, Vanderbilt University, Charité Universitätsmedizin, Berlin, Germany, CFD Research Corporation, and the University of California San Francisco.

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